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ABSTRACT

The purpose of videotex, its effect on the general consumer, and its use by Clemson University (South Carolina) are discussed. Videotex, a technology vehicle designed for the delivery of home information services, is not complicated. The simplicity of videotex makes it an ideal medium for the dissemination of information on a university campus where there are large numbers of both information providers and information seekers. A videotex system, once installed, can be operated without intervention by a technical staff except in the case of system failure and could, therefore, be used for a campuswide bulletin board service with two-way communication capability. Clemson University has developed an oncampus videotex system which, in its pilot stage, was used in a one-way bulletin board application. Expansion has resulted in two-way communications so that the information database can be queried using simple commands from a keypad. The project has aroused widespread interest both on and off campus, and ideas for additional applications are being received. It would appear that there is a great need for a computerized database, access to which requires no knowledge of computing on the part of the user. Videotex appears to provide such a facility. (Author/SW)

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VIDEOTEX: A CAMPUS APPLICATION

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Videotex is a technology vehicle designed for the delivery of home information services. The hallmark of a videotex system is its simplicity from the point of view of the user. In this case, there are two groups of users; those who provide information to the system, and those who retrieve that information. This simplicity makes videotex an ideal medium for the dissemination of information on a university campus where there are large numbers of both information providers and information seekers. A videotex system, once installed, can be operated without intervention by a technical staff (except in the case of system failure) and could, therefore, be used for a campus-wide bulletin board service with two-way communication capability.

Clemson University has developed an on-campus videotex system which, in its pilot stage, was used in a one-way bulletin board application. This is now being expanded to provide two-way communications so that the information data base can be queried using simple commands from a keypad. The project has aroused widespread interest both on and off campus, and ideas for additional applications are constantly being received. It would appear that there is a great need for a computerized data base, access to which requires no knowledge of computing on the part of the user. Videotex appears to provide such a facility.

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VIDEOTEX - A CAMPUS APPLICATION

You may or may not have heard of videotex, but if you have not you undoubtably soon will. Videotex is a new concept in interactive computing services which has to date generated an extraordinary amount of light and heat and very little profit. Despite this lack of return, governments and corporations are counting on a great future for videotex, and are investing in it in a correspondingly grandiose manner.

What then is videotex? Videotex, like word processing, defies a strict definition, but basically refers to a two-way interactive service which is capable of displaying pages of text and graphics on the screen of a modified television set. An alternative name, with less universal acceptance, is viewdata. To confuse the issue somewhat, a more restricted type of service, teletext, is sometimes loosely included under the videotex umbrella. Teletext, however, is a one-way broadcast information service in which pages of information are continuously broadcast and can be selected on the screen of a modified television set by means of a keypad.

The ideas for videotex and teletext originated in England in the early 1970's, videotex with the British Post Office, and teletext with the BBC. The Post Office, which in Britain also had responsibility for the nation's telephone system, was experimenting with a system called Viewphone (comparable to AT&T's Picturephone).

The project was not successful because of the tremendous data transmission requirements of the video component. However, experiments were conducted on using the Viewphone to receive transmitted text, and from this came the concept of using a modified TV set in place of the Viewphone. A test service was provided in 1978 and the first full-fledged public service, Prestel, came into being in 1979.

In a videotex system the information which is to be made available to the users of the system is stored by information providers on a computer system at a service center. The information is stored in pages, a page being one screen of transmitted text, and the information provider pays the service center operator for the privilege of storing the information. A user of the system, a residential customer let us say, can connect his modified TV set to the service center computer via the phone line by dialing the center and using an acoustical coupler. The modified TV set is a simple dial-up terminal.

What is new about videotex?

The following is not new:

1. On-line systems
2. Dial-up access
3. Color graphics
4. Large number of on-line users

The following are new:

1. Cheap user hardware
2. Compact, standard text and graphics protocol
3. Standard, easy-to-use user interface
4. Public access in public places

Why is videotex generating such interest among major profit-oriented companies?

The attraction of videotex to those who originally conceived it was that it provided a means to cheaply put a computer in every home, and those computers could be used to distribute and receive information, purchase products from on-line catalogs, play games, and use up spare capacity on the telephone lines.

The original dream for videotex, then, was that it would be cheap, cheap enough for use in a mass consumer market, and that it would be used in the home.

The type of information suitable for a videotex system could be anything from news and weather to video games, from banking services to home shopping. After logging onto the system, which can be done by physically dialing the service center and utilizing an acoustical coupler, or preferably by using a modified TV with an autodial feature, the user can strike a single key on the keypad to bring up the basic index of information on the system. The index

gives instructions on which page number to key in order to home in on the required information. It usually takes no more than three or four levels of index to get to the desired piece of information.

In the case of home shopping, the basic index would indicate the page for home shopping. This page in turn might indicate the pages for various broad categories of merchandise, and so on until the description of the particular item of interest is found. The item could be ordered and charged to the user's account by depressing the appropriate keys on the keypad.

While the idea sounds good, market trials do not indicate an overwhelming consumer demand. Three major trials of public videotex systems are particularly noteworthy. The first public service was Prestel. From the beginning, business useage exceeded home usage. Although the service is still provided, it has never attracted the subscriber base that its designers intended.

Vista is a joint service of the Canadian government and Canadian Bell. Support has now been withdrawn and the service will soon terminate.

Viewtron is a joint venture between AT&T Information Systems and Knight-Ridder. It is a test service being offered in the Coral Gables area of Florida. So far, no significant data is available on acceptance of the system.

So, in the absence of an obvious market for videotex services, we come back again to the question "Why Videotex?."

The reason that AT&T, IBM, DEC, Knight-Ridder, Time Inc., Dow Jones, and all the other videotex players are involved in videotex is the potential for huge profit. The idea of home services via some easy-to-use medium such as videotex is so good that it is worth a substantial investment. And even if the chance of success is small, no major company can afford even the slightest chance that a competitor could possibly wrap up the home consumer market.

While the emphasis in the U.S. is on home services - banking, library services, shopping, and the like - non-consumer services dominate foreign markets. Many of these government-sponsored videotex projects are extremely large, holding out the prospect of correspondingly large profits.

In France consumer banking and shopping services are being provided by use of a Smartcard, a credit card sized card with an embedded microprocessor to hold cardholder personal and financial data which can be read by special card readers. A major test is under way to offer telephone directory information via videotex.

In Germany the PTT has signed a major contract with IBM for the latter to develop a nationwide public videotex system. The project is behind schedule but it represents a major commitment to videotex on the part of the German government. It also represents a major

commitment on the part of IBM. IBM is also marketing a Prestel-compatible system which runs on the Series I.

One of the reasons videotex is being heavily promoted is that it offers the opportunity to impose standards on public-access information systems. Governments, of course, love standards. The European governments, in particular, are actively promoting their own versions of videotex as a standard hoping to gain a marketing edge for domestic industry.

With governments involved there is the potential for huge profits. But governments are fickle and so no-one is prepared to make a bold push to develop public access systems on their own account.

People making money out of videotex are the sellers of hardware and software, consultants, and conference organizers. Information providers are not making money. Success for public-access videotex systems in the U.S. depends on the ability of the information providers to make money. AT&T is convinced that advertising is the key to making money with videotex systems. Their Viewtron field trial makes heavy use of graphics and is oriented towards revenue-generating information, particularly related to home shopping.

That, briefly, is a description of what videotex is and how it is envisioned that it will affect the general consumer. But why is Clemson University interested in videotex, and what has the University been able to accomplish in this area?

What are the biggest problems facing the management of a university computer center? Money and staff. We need money to keep our equipment up to date, and we need to find ways to keep competent employees. One way in which we can address both issues is to obtain funded research and development contracts which will provided funding for equipment and at the same time give staff members the opportunity to work on interesting projects which they would not be able to do in industry.

In casting around for suitable projects we came across videotex and recognized that this was a natural area of interest for a university. We are, after all, in the information business.

A good portion of the information with which we deal is in the form of all those calendars, directories, and bulletins with which we blanket our campuses. What does it cost to produce that information, and, having produced it, what are the distribution costs? Probably no institution has a good idea, other than that they are extremely high, and getting higher. No matter how good our intentions, the amount of paper we shuffle seems to increase in volume, and nothing we do seems to slow it down.

Could videotex be the answer to this problem of an ever-increasing administrative paperwork load? The answer was and still is by no means clear, but the problem is so severe, and the potential of videotex sufficiently evident, that it appeared a good case for a videotex research and development project could be made.

Perhaps more than other organizations, universities have had high expectations for computers in administrative ares, only to find that the anticipated cost savings never materialized. Videotex may possibly be the exception. The applications of videotex in the university are endless.

Course catalogs, campus maps, calendars, phone directories, and general information are all suitable for videotex. Taking the French approach, and supplying a videotex terminal with every telephone would not only virtually eliminate many of the mass mailings to students and faculty, but would also make feasible individually addressed electronic mail. A videotex system could be interfaced with the university's main computer to produce reports, in color and with graphics, for administrators at their desks.

The simplicity and ease of use of videotex would make it ideal for administrative applications which now require special skills. Use of the central computer, even for the simplest applications, requires some training, whereas videotex requires none. It can be used as easily by a stock boy checking on supplies inventories as by the Vice President for Finance checking on the budget status.

So often what is clear to us in computing is not so apparent to others. Administrators look on anything to do with computers with a somewhat jaundiced eye. Even funding for a relatively modest pilot project is not easy to come by. Clemson's videotex project was no exception to the rule.

It turned out that even a small pilot videotex project would require the involvement and support of a number of other departments on the campus. Publications and Graphics, which would create and maintain the database frames; Facilitating Services, which has the responsibility for the dining halls and other public areas in which monitors would be placed; and Communications, which would be involved in installation of the network.

A crucial part of the project was to sell the idea of videotex to those who were in a position to make it a success. Fortunately videotex has a very attractive feature when it comes to trying to impress someone - graphics. The virtues of graphics in a videotex system are debatable, but as an attention-grabber graphics is unbeatable. The graphics capabilities of videotex were attractive to the Publications and Graphics group at Clemson and representatives of that group were persuaded to attend the Videotex 83 conference in New York. What they saw at Videotex 83 convinced them that videotex had a future at Clemson and that Publications and Graphics could be the major information provider on such a system.

Publications and Graphics, Facilitating Services, and Communications were all represented on a campus-wide committee studying the possibility of installing cable TV on campus. Publications and Graphics arranged for the Computer Center to make a presentation on videotex to that committee and, as a result, broad-based approval for the installation of a pilot videotex

system was obtained. Additionally, the Athletic Department, which was also interested in the possibility of using using the videotex system for publicity of athletic events, made a modest contribution towards the cost of installing five monitors.

The major financial investment came from the Computer Center and Digital Equipment Corporation. DEC support was crucial since the Center did not have the money available to buy the necessary computing hardware to support a multi-user videotex system. Fortunately DEC also saw the merits of working with Clemson to develop a videotex system based on currently-available DEC hardware and software. DEC therefore provided 50% funding for the necessary hardware with the Computer Center funding the other 50% and underwriting the cost of software development. The system was to be run on a VAX 11/750 and be compatible with the North American Presentation Level Protocol Standard (NAPLPS). NAPLPS was the videotex standard originally proposed by AT&T and widely endorsed in North America.

The software was developed by one person over an 18-month period. The actual time invested by that person was about 3 man years. The system was ready for installation by the summer of 1983.

Problems with the system were almost entirely with the installation. Funding, software development, and marshalling of support went extremely smoothly. The same could not be said for what should have been a simple installation.

The test was to have included five monitors in strategic locations - dining halls, Student Union, Computer Center etc. Only recently have all the monitors been made operational. Problems were experienced varying from interference from microwave ovens in the dining halls to the last minute unavailability of keypads. Nevertheless, we persevered and the system is finally working.

Preliminary results are very encouraging. As expected graphics pulls in the customers even though very little substantive information is presented in graphic form. Once the victim is hooked by the graphics he finds the ease of use of the system to be such that he can without any trouble retrieve pages of information from the videotex database.

We will observe the use of the present group of terminals for the balance of the school year before making a determination on whether or not to expand the system. It seems likely, given the interest both on and off campus, that the system will be substantially expanded in 1984-85. While we cannot so far claim to have made a dent in the amount of paper flowing around our campus we have certainly caused our administrators to take a fresh look at the way they distribute information. We are still convinced of the potential of videotex, but we have a long way still to go.